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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/605,399 | 09/29/2003 | David Shiung | 11853-US-PA | 2398 |

31561 7590 02/14/2007

JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
TAIWAN

| EXAMINER | |
|---|---|
| TRAN, KHANH C | |
| **ART UNIT** | **PAPER NUMBER** |
| 2611 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|---|---|---|
| 3 MONTHS | 02/14/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/605,399 | SHIUNG, DAVID | |
| | Examiner | Art Unit | |
| | Khanh Tran | 2611 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *29 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-13 and 15-27* is/are rejected.

7)☒ Claim(s) *3 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Priority*

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in **TAIWAN on 09/02/2003**. It is noted, however, that applicant has not filed a certified copy of the **92124167 application** as required by 35 U.S.C. 119(b).

### *Claim Objections*

2. Claim 10 is objected to because of the following informalities: in line 6, "temptempto" should be changed to -- to --. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-2, 4, 7-13, 15, 18-23 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xin et al. U.S. Patent 6,268,818 B1 in view of Darabi U.S. Patent 7,103,113 B2 and Lampe et al. U.S. Patent 5,633,893.

Regarding claim 1, Xin et al. invention is related generally to digital signal processing and digital communications, and more specifically to modulation using digital-to-analog converters and frequency multipliers.

Xin et al. does not expressly teach the transmission system being a non-coherent frequency shift keying transmitting circuit.

However, Xin et al. discusses that commonly used modulation schemes for transmitting digital data over a bandpass channel include, for example, Amplitude Shift Keying (ASK), Phase Shift Keying (PSK), and Frequency Shift Keying (FSK), etc.; see column 1 lines 40-50. Because Xin et al. transmission system applies to modulation, in general, using digital-to-analog converters and frequency multipliers to reduce the distortion and attenuation caused by sinc effect, therefore, one of ordinary skill in the art at the time the invention was made would have been motivated to apply Xin et al. teachings to different modulation schemes for transmitting digital data over a bandpass channel as discussed above.

In column 11 lines 10-65, FIG. 8 illustrates a transmitter 800 including a digital signal-processing block 804 for providing an I-channel component to an input of a digital multiplier 806, a digital signal-processing block 810 for providing an Q-channel component to an input of a digital multiplier 812.

Xin et al. does not teach the transmitter 800 including a micro processing unit and a frequency synthesizer as set forth in the application claim.

Darabi discusses a FSK transmitter of a prior art in another US Patent, the FSK transmitter including a digital sine wave generator implemented utilizing a direct digital

frequency synthesizer (DDFS), digital to analog converters, low pass filters, mixers, a summing module, and a power amplifier. FIG. 1 shows a digital input data fed to the DDFS, but does not show a micro processing unit for receiving a baseband signal and generating a digital signal sequence. Nevertheless, because the digital input data is baseband, one of ordinary skill in the art at the time the invention was made would have recognized that the transmitter would include a processing unit for receiving an analog baseband input and converting into the digital input data.

Because direct digital frequency synthesizer (DDFS) is known in the art for synthesizing stable digital signal, therefore, one of ordinary skill in the art at the time the invention was made would have been motivated to modify Xin et al. digital signal-processing blocks 804 and 805 to implement Darabi teachings as discussed above.

Referring back to FIG. 8 of Xin et al. invention, in column 11 lines 10-65, transmitter 800 further includes digital sine sequence and digital cosine sequence for up-converting I-channel and Q-channel components. The digital sine sequence and digital cosine sequence correspond to the claimed first oscillator; see column 11 lines 10-30. Transmitter 800 also includes a digital-to-analog converter (DAC) 814, a second oscillator 820 coupled to DAC 814 for upconverting to the RF signal, a bandpass filter 822 coupled to second oscillator 820 for removing out of band noise of the RF frequency signal, and an RF OUT signal 830, which can be provided to RF power amplifiers and an antenna, not shown in the FIG. 8; see also column 11 lines 40-50.

Xin et al. does not teach a first filter as set forth in the application claim.

Lampe et al. teaches a similar transmitter as illustrated in FIG. 4(a) including a digital filter 13 coupled to a DACs 14 and 15. Because it is necessary to implement a bandpass filter in each stage in a transmitter to eliminate out of band noise as common knowledge, therefore, one of ordinary skill in the art at the time the invention was made would have been motivated to modify Xin et al. transmitter 800 to further include a bandpass filter as disclosed in Lampe et al. FIG. 4(a) transmitter.

Regarding claim 2, as discussed in claim 1 rejection, Xin et al. transmitter is modified to include a direct digital frequency synthesizer (DDFS)..

Regarding claim 4, as recited in claim 1 rejection, the synthesized signal includes I-channel and Q-channel components.

Regarding claim 7, as recited in claim 1 rejection, the second oscillator is a local oscillator.

Regarding claim 8, as recited in claim 1 rejection, filter 822 is an analog bandpass filter.

Regarding claim 9, as recited in claim 1 rejection, RF out further includes a power amplifier.

Regarding claim 10, claim is rejected on the same ground as for claim 1 because of similar scope. Furthermore, Xin et al. FIG. 8 includes a digital section, an analog section including an IF section for upconverting the digital sequence into an IF signal, and RF out 830 for upconverting the IF signal to an RF signal.

Regarding claims 11-12, claims 11-12 limitations have been discussed in claim 1 rejection above.

Regarding claim 13, claim is rejected on the same ground as for claim 2 because of similar scope.

Regarding claim 15, claim is rejected on the same ground as for claim 4 because of similar scope.

Regarding claim 18, claim is rejected on the same ground as for claim 7 because of similar scope.

Regarding claim 19, claim is rejected on the same ground as for claim 8 because of similar scope.

Regarding claim 20, claim is rejected on the same ground as for claim 9 because of similar scope.

Regarding claim 21, claim is rejected on the same ground as for claim 1 because of similar scope.

Regarding claim 22, claim is rejected on the same ground as for claim 1 because of similar scope.

Regarding claim 23, claim is rejected on the same ground as for claim 2 because of similar scope.

Regarding claim 26, claim is rejected on the same ground as for claim 7 because of similar scope.

Regarding claim 27, claim is rejected on the same ground as for claim 8 because of similar scope.

4. Claims 5, 16 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xin et al. U.S. Patent 6,268,818 B1, Darabi U.S. Patent 7,103,113 B2 and Lampe et al. U.S. Patent 5,633,893 as applied to claim 1 above, and further in view of Chen et al. U.S. Patent 7,167,528.

Regarding claim 5, Xin et al. does not disclose the digital sine sequence and digital cosine sequence generators being a numerical-controlled oscillator.

Chen et al. teaches a similar modulation system as shown in FIG. 3, the modulation system including a digital modulator and an IF modulator. Chen et al. teaches utilization of a numerical-controlled oscillator (NCO) to generate a frequency offset near baseband to compensate for the Doppler effect. Because NCO is known for generating accurate frequency and in Chen et al. teachings for compensating frequency offset due to Doppler effect, therefore, one of ordinary skill in the art at the time the invention was made would have been motivated to modify Xin et al teachings to implement a NCO to generate the digital sine sequence and digital cosine sequence.

Regarding claim 16, claim is rejected on the same ground as for claim 5 because of similar scope.

Regarding claim 24, claim is rejected on the same ground as for claim 5 because of similar scope.

5. Claims 6, 17 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xin et al. U.S. Patent 6,268,818 B1, Darabi U.S. Patent 7,103,113 B2 and Lampe et al. U.S. Patent 5,633,893 as applied to claim 1 above, and further in view of Genrich et al. U.S. Patent 5,596,609.

Regarding claim 6, Lampe et al. does not disclose digital filter 13 being a cascaded integrator-comb filter as set forth in the application claim.

Genrich et al. teach a parallel-cascaded integrator-comb (PCIC) filter as shown in FIG. 1a and 1b. Because Genrich et al. parallel-cascaded integrator-comb (PCIC) filter is designed for use in decimation and interpolation applications in digital domain, therefore, one of ordinary skill in the art at the time the invention was made would have been motivated to modify Lampe et al teachings to implement the parallel-cascaded integrator-comb (PCIC) filter as taught by Genrich et al..

Regarding claim 17, claim is rejected on the same ground as for claim 6 because of similar scope.

Regarding claim 25, claim is rejected on the same ground as for claim 6 because of similar scope.

***Allowable Subject Matter***

6. Claims 3 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sato U.S. Patent 6,392,499 B1 discloses "Frequency Shift Modulation Circuit".

Sato U.S. Patent 6,392,499 B1 discloses "Frequency Shift Modulation Circuit".

Sundegard U.S. Patent 5,834,985 discloses "Digital Continuous Phase Modulation For a DDS-Driven Phase Locked Loop".

Gustafsson et al. U.S. Patent 6,259,747 B1 discloses "IQ Modulator, And Associated Method".

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCT

Khanh Cong Tran

*02/09/2007*
*Khanh Tran*
*Primary Examiner, AU 2611*